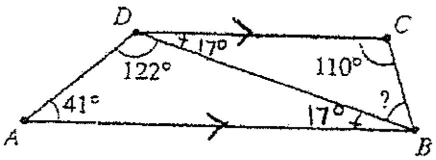
Name: ______________________________ TP: _____

Monday Do Now
Geometry

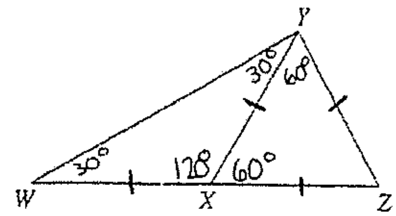
29. In the figure below, $\overline{AB} \parallel \overline{DC}$, $\angle A$ measures 41°, $\angle C$ measures 110°, and $\angle ADB$ measures 122°. What is the measure of $\angle CBD$?



A. 17°
B. 41°
C. 53°
D. 63°
E. 69°

$\angle B = 53°$

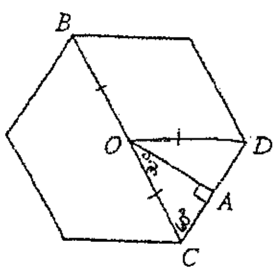
35. In the figure below, X is the midpoint of $\overline{WZ}$ and $\triangle XYZ$ is an equilateral triangle. What is the measure of $\angle WYZ$?



A. 60°
B. 75°
C. 90°
D. 105°
E. 120°

$\angle WYZ = 30° + 60°$

28. In the regular hexagon below, vertices B, C, and D are labeled; $\overline{OA}$ is perpendicular to $\overline{CD}$; A is the midpoint of $\overline{CD}$; and O is the midpoint of $\overline{BC}$. What is the degree measure of $\angle AOC$?



F. 15°
G. 20°
H. 30°
J. 45°
K. 60°

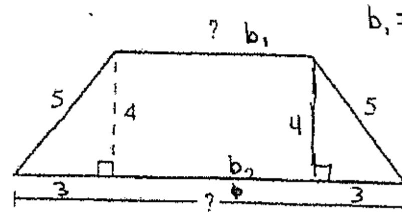
$\angle AOC = 30°$

34. The trapezoid below, with dimensions given in inches, has an area of 36 square inches. What are the lengths, in inches, of the bases of the trapezoid?

(Note: $A = \frac{1}{2}h(b_1 + b_2)$ is a formula for the area of a trapezoid.)

$b_1 = b_2 + 3 + 3$

$b_1 = b_2 + 6$



F. 4 and 14
G. 6 and 9
H. 6 and 12
J. 8 and 10
K. 9 and 9

$A = \frac{1}{2} h (b_1 + b_2)$

$36 = \frac{1}{2} \cdot 4 (b_1 + b_2)$

$36 = 2 (b_1 + b_2)$

$18 = b_1 + b_2$

$18 = (b_2 + 6) + b_2$

$12 = 2b_2$

$6 = b_2$

$b_1 = b_2 + 6$

$b_1 = 6 + 6$

$b_1 = 12$

check

$\frac{1}{2} \cdot 4 (6 + 12)$

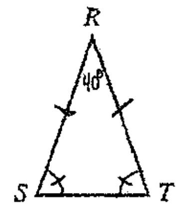
$2 (18)$

36 ✓

Name: ______________________________ TP: _____

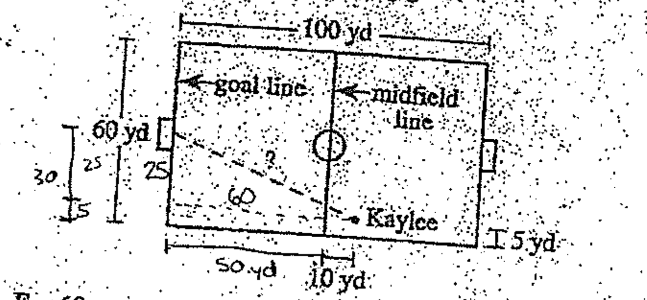
Tuesday Do Now
Geometry

7. In $\triangle RST$, shown below, $\overline{RS} \cong \overline{RT}$, and the measure of $\angle R$ is 40°. What is the measure of $\angle S$?



A. 20°
B. 40°
C. 50°
D. 70°
E. Cannot be determined from the given information

46. When Kaylee kicked the winning soccer goal, she was 10 yards behind the midfield line and 5 yards from the sideline, as shown in the figure below. To the nearest yard, how far was Kaylee from the center of the goal line when she kicked the winning goal?

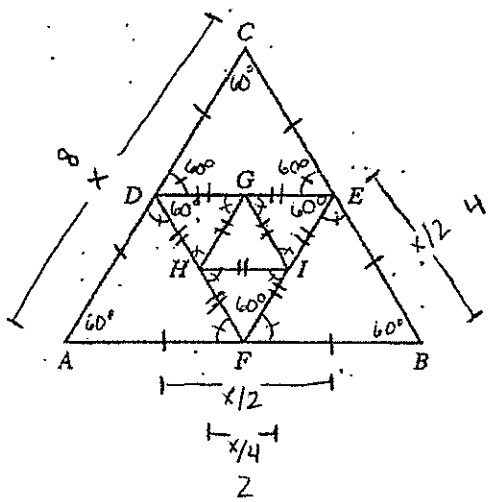


F. 60
G. 65
H. 67
J. 70
K. 72

$25^2 + 60^2 = 4225$

$\sqrt{4225} = 65$

31. In the figure below, $\triangle ABC$ is equilateral. Points D, E, and F are the midpoints of the sides of $\triangle ABC$. Points G, H, and I are the midpoints of the sides of $\triangle DEF$. A side of $\triangle ABC$ is how many times as long as a side of $\triangle GHI$?

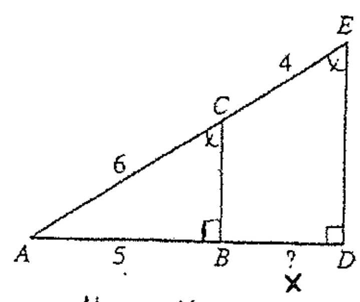


A. 2
B. 3
C. 4
D. 8
E. 16

AC : GH
8 : 2
4 : 1

57. In right triangle $\triangle ADE$ shown below, C is on $\overline{AE}$, B is on $\overline{AD}$, and $\overline{BC}$ is parallel to $\overline{DE}$. The dimensions given are in centimeters. How many centimeters long is $\overline{BD}$?

A. $\frac{10}{3}$
B. $\frac{24}{5}$
C. $\frac{25}{3}$
D. 3
E. 5



$\frac{4}{6+4} = \frac{x}{x+5}$

$4(x+5) = (6+4)(x)$

$4x + 20 = 10x$

$20 = 6x$

$\frac{10}{3} = \frac{20}{6} = x$

Name: ______________________ TP: _____

Wednesday Do Now
Geometry

2. A point at (–3,7) in the standard (x,y) coordinate plane is shifted down 3 units and right 7 units. What are the coordinates of the new point?

F. (–10,10)
~~G. (0, 0)~~
H. (4, 4)
J. (4,10)
K. (10,10)

$(-3, 7)$
$+7 \quad -3$
$(4, 4)$

25. To check the slope of a ramp, a building inspector places an overlay of the standard (x,y) coordinate plane on the construction blueprint so that the x-axis aligns with the horizontal on the blueprint. The line segment representing the side view of the ramp goes through the points (1,–3) and (14,2). What is the slope of the planned ramp?

A. $-\frac{1}{15}$
B. $-\frac{1}{13}$
C. $-\frac{1}{6}$
D. $\frac{5}{13}$
E. $\frac{13}{5}$

$$\frac{2-(-3)}{14-1} = \frac{5}{13}$$

28. What is the midpoint of a line segment whose endpoints have coordinates (–5,3) and (15,–9) in the standard (x,y) coordinate plane?

F. (–2, 6)
~~G. (–1, 3)~~
H. (5,–3)
~~J. (10,–6)~~
K. (10, 6)

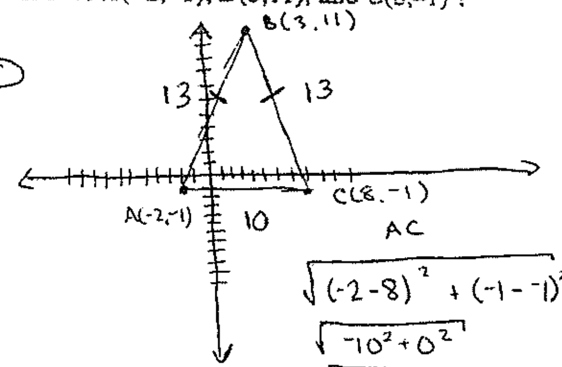
$$\left(\frac{-5+15}{2}, \frac{3+(-9)}{2}\right)$$

$$\left(\frac{10}{2}, \frac{-6}{2}\right)$$

$$(5, -3)$$

39. In the standard (x,y) coordinate plane, what is the perimeter, in coordinate units, of an isosceles triangle having vertices $A(-2,-1)$, $B(3,11)$, and $C(8,-1)$?

A. 23
~~B. 33~~
C. 36
D. 44
E. 55



AC

$\sqrt{(-2-8)^2 + (-1 - -1)^2}$

$\sqrt{-10^2 + 0^2}$

$\sqrt{100} = 10$

BC $= \sqrt{(3-8)^2 + (11 - -1)^2}$

$\sqrt{5^2 + 12^2}$

$\sqrt{25 + 144}$

$13 = \sqrt{169}$

Name: ______________________________ TP: ______

Thursday Do Now
Geometry

39. What is the slope of the line through (2,–5) and (–3,4) in the standard (x,y) coordinate plane?

A. $-\frac{9}{5}$
B. $-\frac{5}{9}$
C. $\frac{1}{9}$
D. $\frac{9}{5}$
E. 9

$$\frac{4-(-5)}{-3-2} = \frac{4+5}{-5} = \frac{-9}{5}$$

30. The coordinates of the endpoints of $\overline{JK}$, in the standard (x,y) coordinate plane, are (–2,–6) and (4,6). What is the x-coordinate of the midpoint of $\overline{JK}$?

F. 0
G. 1
H. 2
J. 3
K. 6

$$\left(\frac{-2+4}{2}, \frac{-6+6}{2}\right)$$

$$\left(\frac{2}{2}, \frac{0}{2}\right)$$

$$(1, 0)$$

39. On a map of Blueville in the standard (x,y) coordinate plane, where 1 coordinate unit represents 1 block, the middle school is at (–8,3) and the high school is at (4,–2). What is the straight-line distance, in blocks, between the high school and the middle school?

A. 13
B. 17
C. $\sqrt{7}$
D. $\sqrt{13}$
E. $\sqrt{17}$

$$\sqrt{(-8-4)^2 + (3 - -2)^2}$$

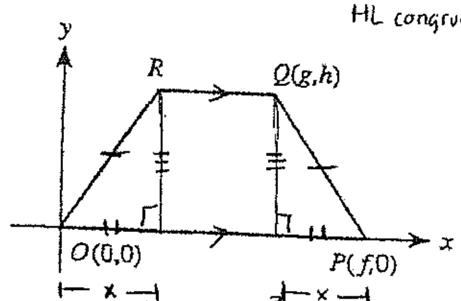
$$\sqrt{(-12)^2 + 5^2}$$

$$\sqrt{144+25} = \sqrt{169}$$

$$= 13$$

58. A trapezoid with $\overline{RQ}$ parallel to $\overline{OP}$ and $\overline{RO}$ congruent to $\overline{QP}$ is shown in the standard (x,y) coordinate plane below. What is the x-coordinate for point R in terms of f and g ?

HL congruence



F. $\frac{f+g}{2}$
G. $f-g$
H. $g-f$
J. $2f-g$
K. Cannot be determined from the given information

$x = f - g$

x
g
f

WEEK 35 KEY

Name: KEY IN THE BACK TP: ______

CW#96: Graph $y = ax^2 + c$
Geometry

CRS	Algebra Content
Objective	4.1 Graph $y = ax^2 + c$

***(**Teacher Note:** All of today's notes will be done in student notebooks. Teacher directions will always be in parentheses**)*

(Project. Show students how to set up one graph in their notebooks)

Warm Up.

1) Graph the following equations in your graph paper notebooks:

Ex. 1) $y = -\frac{5}{3}x - 2$ a) $y = -\frac{2}{3}x - 4$ b) $-3y = -x - 12$ c) $-3x - y = 8$

2) (*Think, pair, share)* Write one sentence explaining what all four of these graphs have in common.

(Open from dropbox, but save to desktop so we don't get conflicted copies).

Power Point.

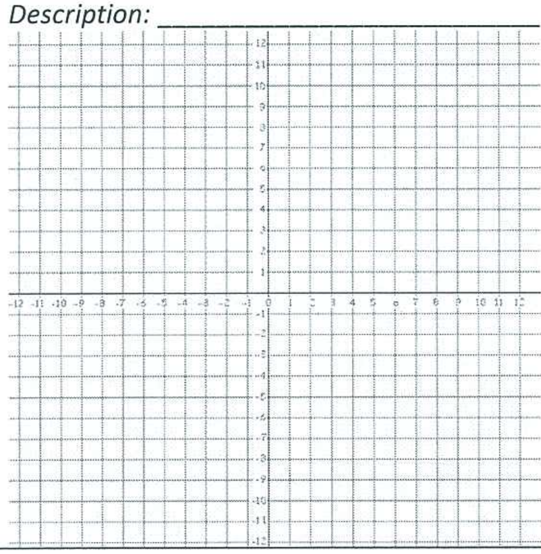
(Show powerpoint to help students differentiate between what linear relationships look like in real life, and what quadratic relationships look like in real life).

Notes.

Linear Graph

*Form of Equation:*______________________________

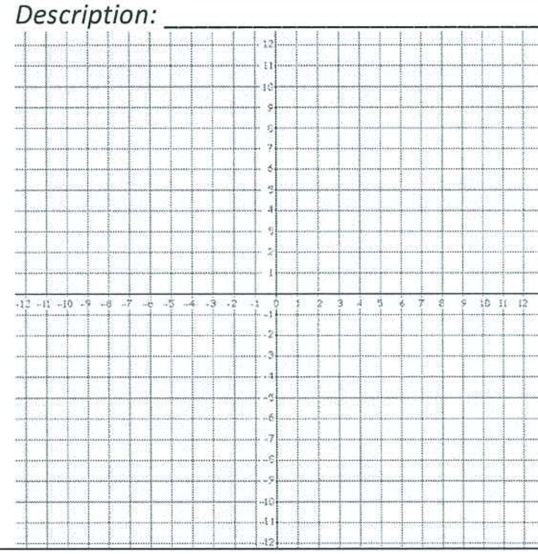
Description: ______________________________



Quadratic Graph

*Form of Equation:*______________________________

Description: ______________________________



Bringing Zesty Back.

<u>Quadratic Function Vocabulary</u> *(Have students label on graph above as you teach vocab.)*

Parabola: U – Shaped graph that results from a quadratic function.

Vertex: The maximum or minimum point on a parabola.

Axis of Symmetry: The line that passes through the vertex and divides the parabola into two symmetrical parts

---

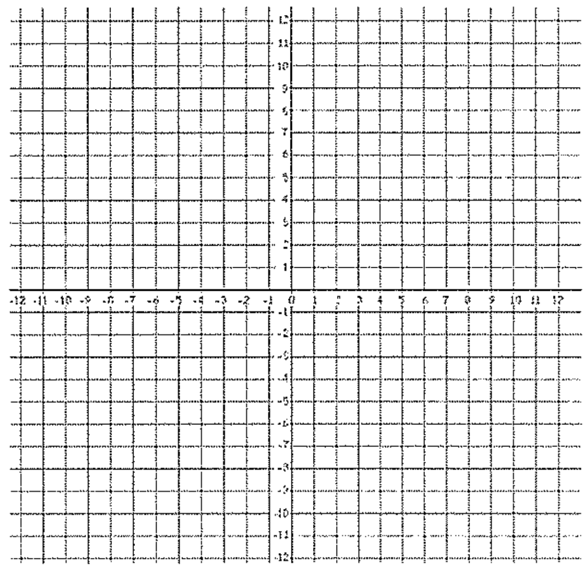
I do/We do.

Parent Quadratic Function – Most Basic Form: $y = x^2$

Step 1: Make a table of values.

Step 2: Plot the points from the table.

Step 3: Identify the domain (x-values) and range (y-values).



x	y

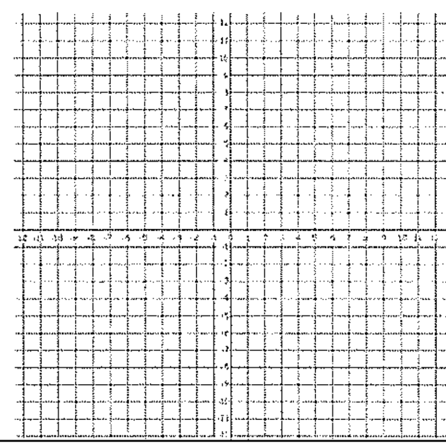
Axis of Symmetry:

Vertex: Max? or Min?

Domain:

Range:

Example 2: $y = \frac{1}{2}x^2 - 2$



x	y

Axis of Symmetry:

Vertex: Max? or Min?

Domain:

Range:

Bringing Zesty Back.

Example 3: $y = -\frac{2}{3}x^2 - 2$

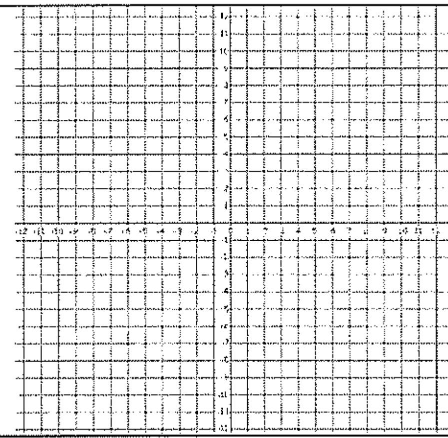
x	y

Axis of Symmetry:

Vertex: Max? or Min?

Domain:

Range:



You Do.

Directions: Graph the following quadratic equations in your notebook.

- **A) Create a table of values.**
- **B) Graph the equation**
- **C) Identify the axis of symmetry**
- **D) Identify the vertex & whether the vertex is the minimum or maximum value of the equation.**
- **E) Identify the domain & range**

1) $y = x^2 - 3$	2) $y = -2x^2 + 10$
3) $y = 5x^2$	4) $y = 3x^2 - 6$
5) $y = \frac{1}{2}x^2 + 7$	6) $y = -\frac{3}{4}x^2 - 1$
7) $y = -\frac{2}{5}x^2 + 2$	8) $y = \frac{1}{3}x^2$

9) **Challenge - Graphing Calculator:**

A cross section of the parabolic surface of an antenna shown can be modeled by the graph of the function $y = 0.012x^2$ where *x* and *y* are measured in meters.

a. Graph the function on your calculator.
b. Find the domain and range.

(Project)

Exit Slip.

Directions: Graph the following quadratic equation in your notebook:

$$y = -2x^2 - 1$$

Bringing Zesty Back.

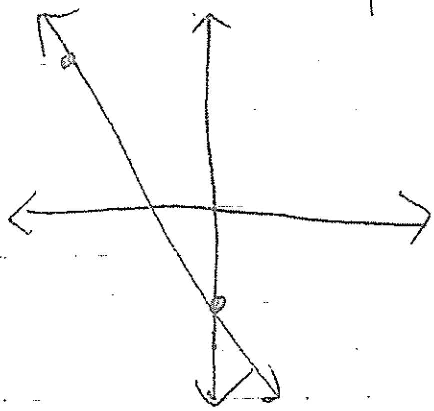
- A) Create a table of values.
- B) Graph the equation
- C) Identify the axis of symmetry
- D) Identify the vertex & whether the vertex is the minimum or maximum value of the equation.
- E) Identify the domain & range

OW96 Key: Graph $y=ax^2+c$

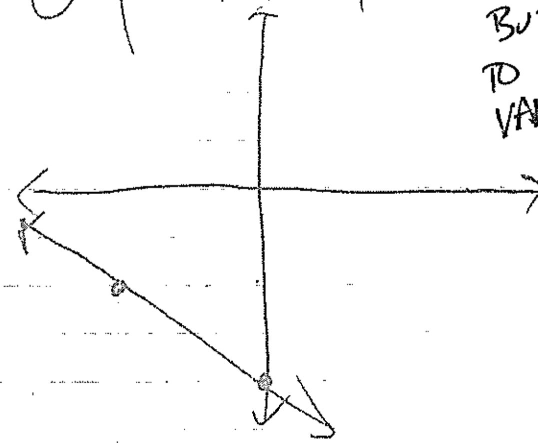
THIS KEY IS THE SAME, BUT NEEDS TO BE DONE VANG-STYLE IN CLASS

①

EX.1 $y=-\frac{5}{3}x-2$

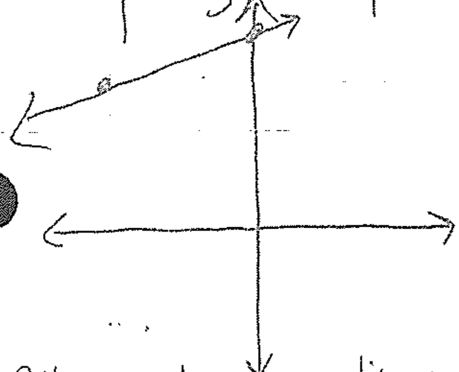


ⓐ $y=-2/3x-4$



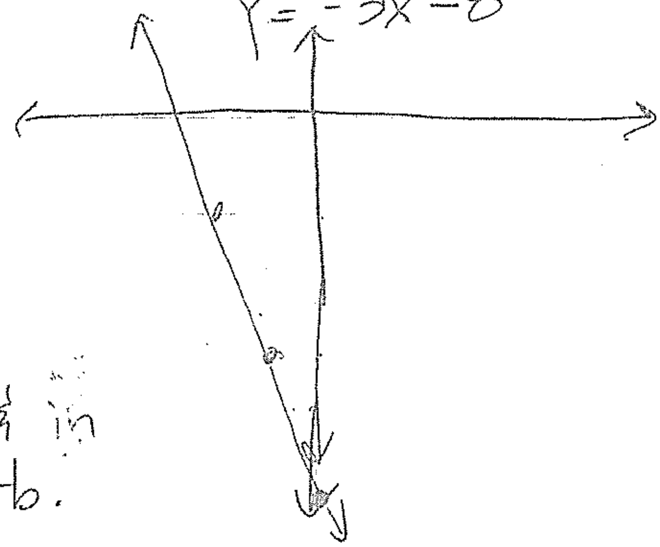
ⓑ $-3y=-x-12$

$y=\frac{1}{3}x+4$



ⓒ $-3x-y=8$

$y=-3x-8$



② All graphs are linear & in the same form: $y=mx+b$.

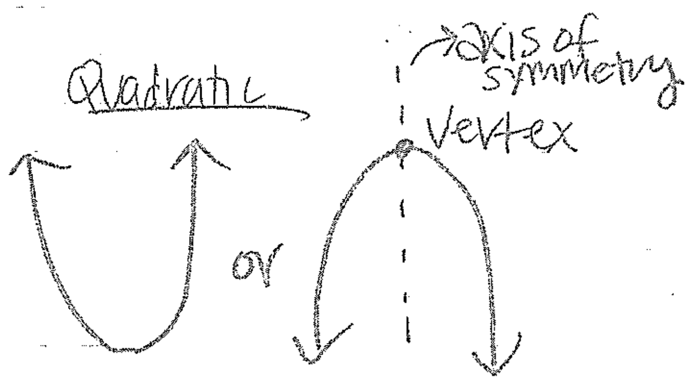
Notes.

Linear

Form: $y=mx+b$

- Straight line

Quadratic



Form: $y=ax^2+bx+c$

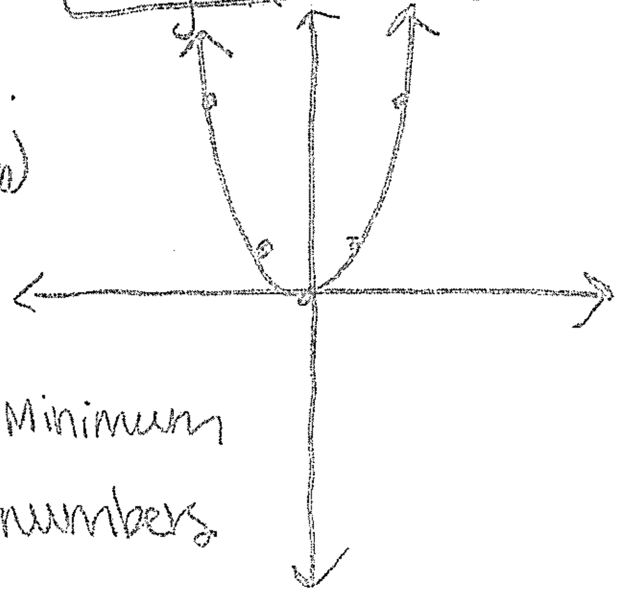
Description: "U" shape

Vocabulary

(In teacher notes)

I do/We do VANG STYLE!

Parent Function
$y = x^2$



Step 1: Make a table of values.

Step 2: Plot the points from the table.

Step 3: Identify the domain (x-values) & range (y-values).

X	Y
-2	4
-1	1
0	0
1	1
2	4

Axis of Symmetry: $x=0$

Vertex: $(0,0)$; Minimum

Domain: All real numbers

Range: $\{y \geq 0\}$

Example 2

$y = \frac{1}{2}x^2 - 2$

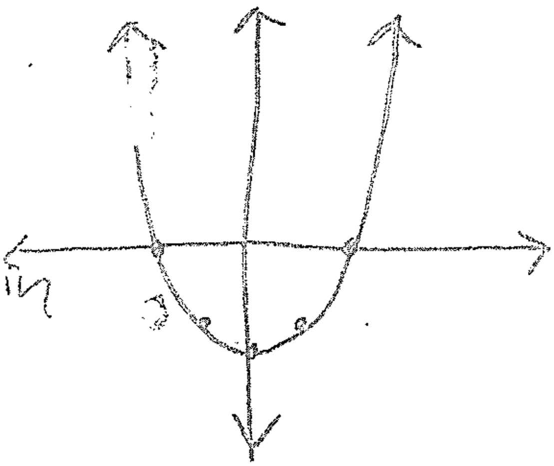
X	Y
-2	0
-1	-1.5
0	-2
1	1.5
2	0

AS: $x=0$

V: $(0,-2)$; Min

D: All real #s

R: $\{y \geq -2\}$



Example 3

$y = -\frac{2}{3}x^2 - 2$

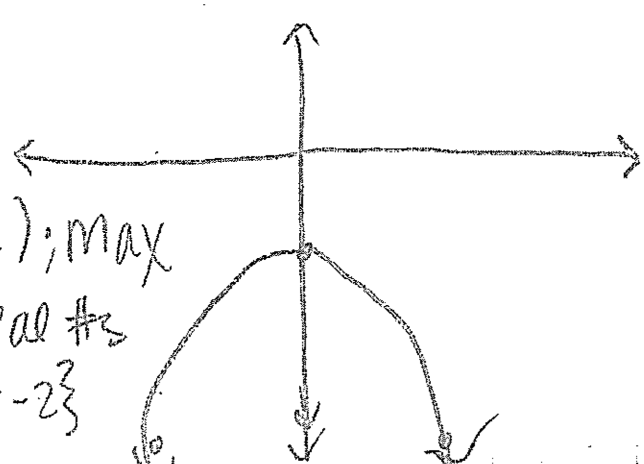
X	Y
-3	-6
0	-2
3	-6

AS: $x=0$

V: $(0,-2)$; max

D: All real #s

R: $\{y \leq -2\}$



You Do. 1

1) $Y = X^2 - 3$

A.

X	Y
-2	1
-1	-2
0	-3
1	-2
2	1

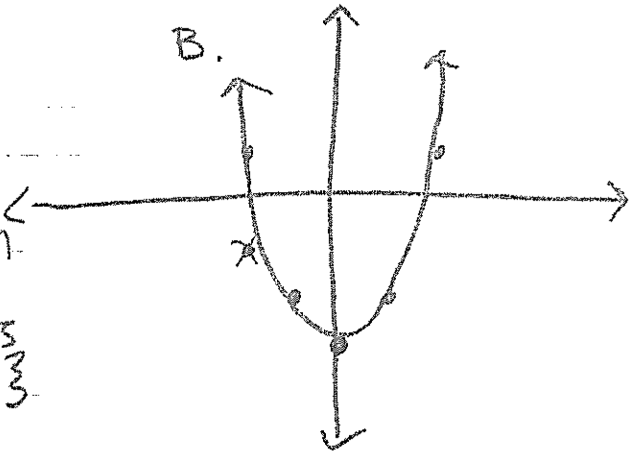
C. $X = 0$

D. $(0, -3)$; Min

E. D - All ~~real #s~~

R - $\{y \geq -3\}$

B.



2) $Y = -2X^2 + 10$

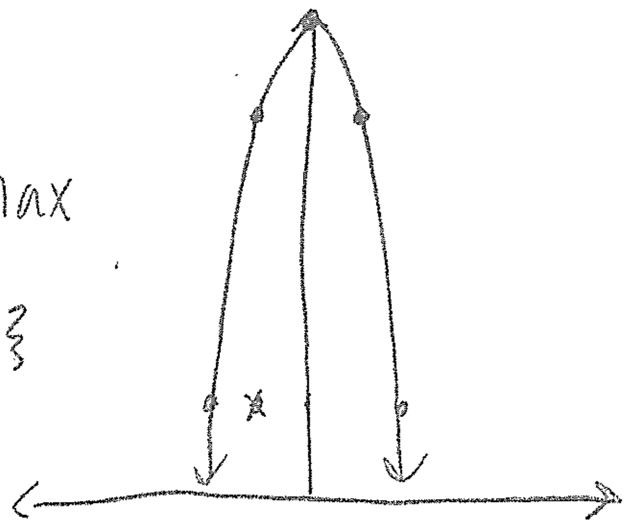
X	Y
-2	2
-1	8
0	10
1	8
2	2

C. $X = 0$

D. $(0, 10)$; Max

E. D - ARN

R - $\{y \leq 10\}$



3) $Y = 5X^2$

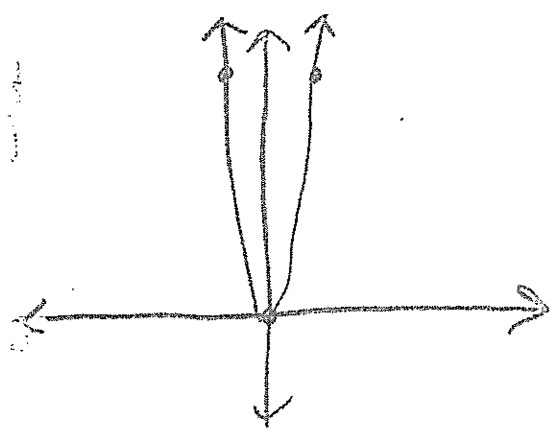
X	Y
-1	5
0	0
1	5

C. $X = 0$

D. $(0, 0)$; Min

E. D - ARN

R - $\{y \geq 0\}$



4) $Y = 3X^2 - 6$

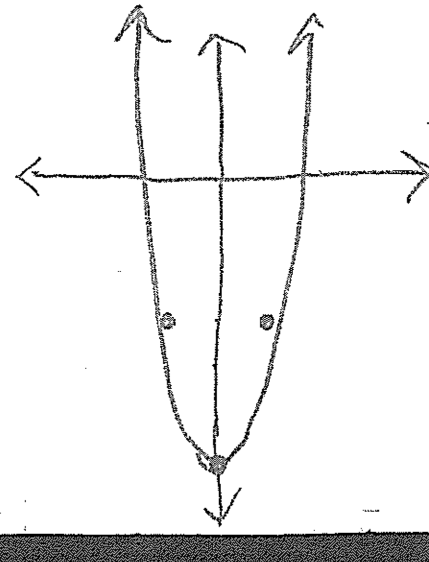
X	Y
-2	6
-1	-3
0	-6
1	-3
2	6

C. $X = 0$

D. $(0, -6)$; Min

E. D - ARN

R - $\{y \geq -6\}$



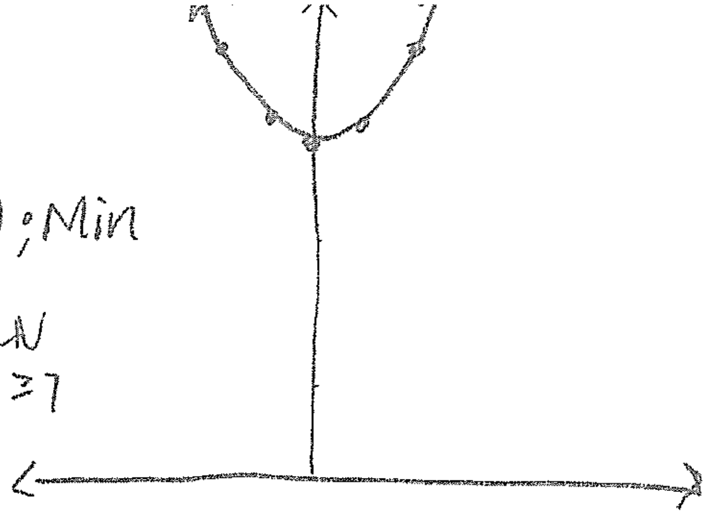
5) $y = \frac{1}{2}x^2 + 7$

x	y
-2	9
-1	7.5
0	7
1	7.5
2	9

C. $x = 0$

D. $(0,7)$; Min

E. D-ARN
R-$\{y \geq 7$



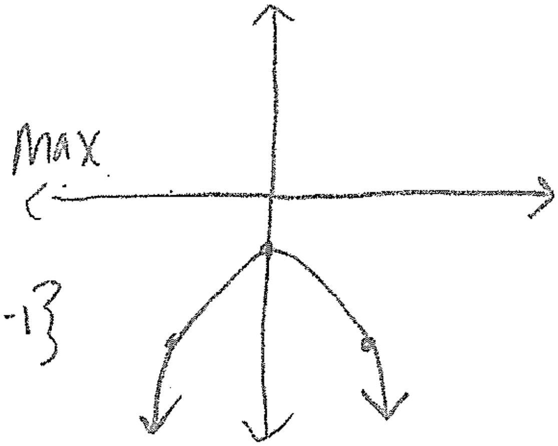
6) $y = -\frac{3}{4}x^2 - 1$

x	y
-2	-3
0	-1
2	-3

C. $x = 0$

D. $(0,-1)$; Max

E. D-ARN
R-$\{y \leq -1\}$



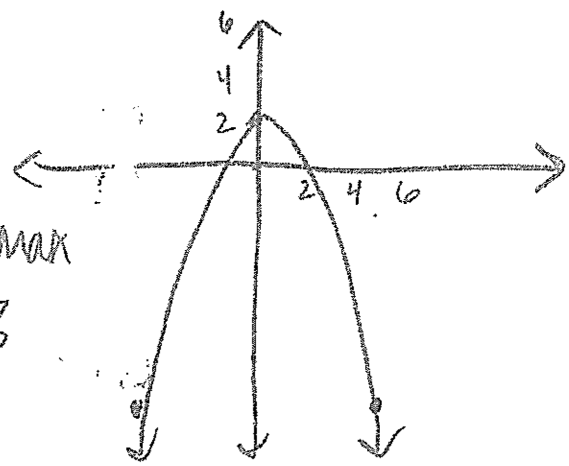
7) $y = -\frac{2}{5}x^2 + 2$

x	y
-5	-10
0	2
5	-10

C. $x = 0$

D. $(0,2)$; Max

E. $\{y \leq 2\}$



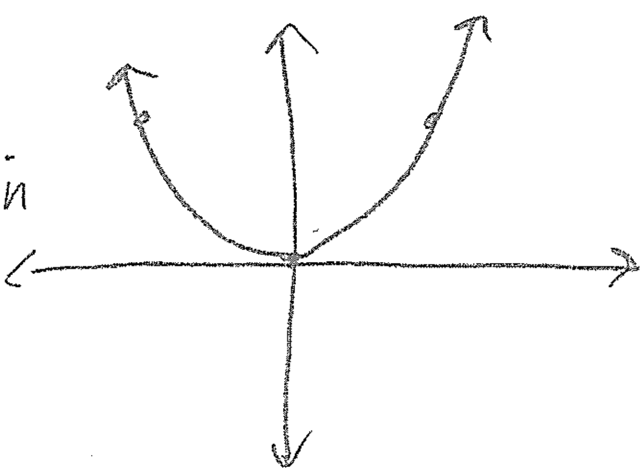
8) $y = \frac{1}{3}x^2$

x	y
-3	3
0	0
3	3

C. $x = 0$

D. $(0,0)$; Min

E. $\{y \geq 0\}$



Name: KEY TP: ______

CW#97 Quadratic Function Transformations
Geometry

CRS	Algebra Content
Objectives	4.2 Compare quadratic graphs in form y =ax^2 + c with the parent quadratic function

It's time to get CRRRRAZY on your graphing calculator!
Steps to graphing quadratic equations:

1) Graph the parent quadratic function: $y = x^2$

- Y=
- X,T,θ,n
- x^2
- ZOOM and then 6
  - This will graph your function from -10 to 10 on both the x- and y-axes

2) To see a table of the function:

- Get to the TABLE by pressing 2ND then GRAPH
- Scroll down the table by using the up and down arrow keys
- Complete the table for the parent quadratic equation

X	Y
-2	4
-1	1
0	0
1	1
2	4

- Does this function have a minimum or a maximum? Minimum
- Using the table, what is the vertex? (0,0)

3) To change the window of the graph (to see a different view on your calculator).

- Using the table, we see that there are no negative y-values. Therefore, we can adjust our window to get a better view of the parent function
- WINDOW
- The X values are fine, the Y values we can adjust
- Scroll to Ymin. This is the minimum y-value. Enter -1
- GRAPH
- Now you can see more of the graph
- ZOOM and then 6 brings you back to the standard window

PUSH IT TO THE LIMIT.

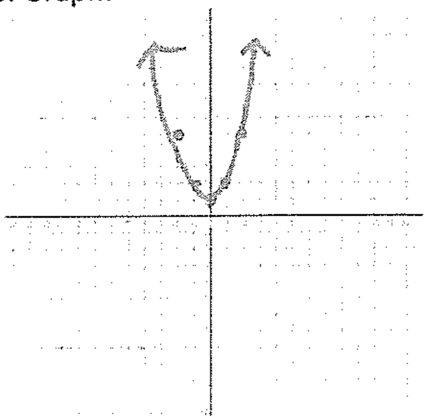
Try two on your own!

1) $y = x^2 + 1$

a. Table:

x	y
-2	5
-1	2
0	1
1	2
2	5

b. Graph:



c. AOS: x=0

d. Vertex: (0 , 1)

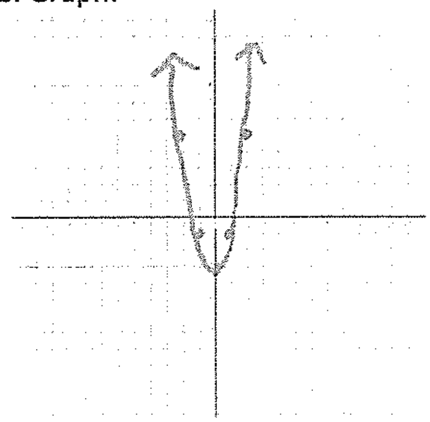
circle one: max min

2) $y = 2x^2 - 3$

a. Table:

x	y
-2	5
-1	-1
0	-3
1	-1
2	5

b. Graph:



c. AOS: x=0

d. Vertex: (0 , -3)

circle one: max min

Types of Quadratic Transformations:

- Quadratic functions can shrink (narrow) or stretch (wide)
- Shift up or down
- Reflect on the x-axis

Transformation: Stretch (narrow)

$|a| > 1$

1) Graph $y_1 = x^2$ and $y_2 = 3x^2$

2) Sketch the transformation:

Transformation: Shrink (wide)

$|a| < 1$

1) Change the second graph: $y_2 = \frac{1}{4}x^2$

2) Sketch the transformation:

Transformation: Shift up

$c > 0$

1) Change the second graph:

$y_2 = x^2 + 5$

2) Sketch the transformation:

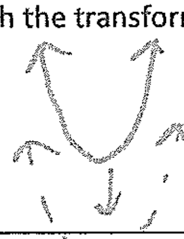
Transformation: Shift down

$c < 0$

1)Change the second graph:

$y_2 = x^2 - 3$

2) Sketch the transformation:

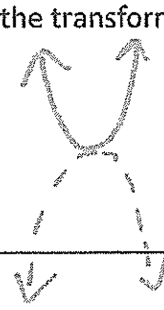


Transformation: Reflection (sad face)

$a = -$

1) Graph $y_1 = x^2$ and $y_2 = -x^2$

2) Sketch the transformation:



PUSH IT TO THE LIMIT.

Examine the quadratic equations in the problems below. Write one sentence explaining what the transformation(s) will be. *For example: The graph of* $y = -\frac{1}{2}x^2$ *will be a reflection because the a term is negative and a stretch because* $|a|$ *is less than 1.* Then, graph the equations below using your graphing calculator to justify your explanation.

For all problems, the parent quadratic function should be graphed: $y_1 = x^2$ $\quad y = ax^2 + c$

Ex 1: $y = 3x^2$

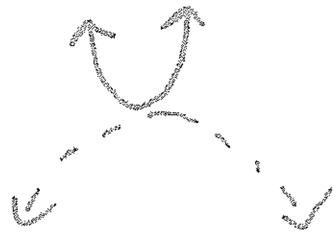
Explanation of Transformation:
This is a shrink b/c $|a| > 0$.

Sketch:

2) $y = -\frac{1}{2}x^2$

Explanation of Transformation:
This is a stretch b/c $|a| < 0$ and the "a" term is negative.

Sketch:



3) $y = x^2 - 6$

Explanation of Transformation:
This is a shift down of 6 units b/c the c-term is negative.

Sketch:

4) $y = 2x^2 + 2$

Explanation of Transformation:
This is a shrink b/c $|a| > 0$ & a shift up to units b/c the c-term is positive.

Sketch:

5) $y = \frac{2}{3}x^2 - 6$

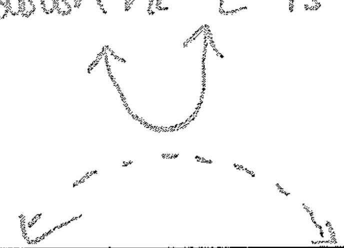
Explanation of Transformation:
This is a stretch b/c $|a| < 0$ & a shift down 6 units b/c c is negative.

Sketch:

6) $y = -\frac{1}{2}x^2 - 1$

Explanation of Transformation:
This is a stretch b/c $|a| < 0$, a reflection b/c a is negative, & a shift down b/c c is negative.

Sketch:



PUSH IT TO THE LIMIT.

1) Which multiple choice option describes the correct transformation to the parent graph ($y = x^2$)? $y = -7x^2$ A. Shrink and shift down 1 units B. Stretch and shift down 3 units C. Stretch and reflection across the x-axis D. Shrink, shift down 3 units, and reflection across the x-axis E. Shrink and reflection across the x-axis	2) How would the graph of the function $y = x^2 + 4$ affected if the function were changed to $y = x^2 - 3$? A. The graph would shift 4 units up. B. The graph would shift 3 units down. C. The graph would shift 7 units down. D. The graph would shift 4 units to the right. E. The graph would shift 4 units down.
3) Describe the transformation of $y = 5x^2 - 4$ to the parent function. - Shrink - Shift down 4 units	4) How would the graph of the function $y = x^2 - 2$ be affected if the function were changed to $y = x^2 + 4$? Up 6 units
5) Which multiple choice option describes the correct transformation to the parent graph ($y = x^2$)? $y = -8x^2 + 5$ A. Shrink and shift up 5 units B. Stretch and shift up 5 units C. Stretch and reflection across the x-axis D. Shrink, shift up 5 units, and reflection across the x-axis E. Stretch, shift up 5 units, and reflection across the x-axis	6) How would the graph of the function $y = x^2 - 2$ affected if the function were changed to $y = x^2 + 1$? A. The graph would shift 1 unit up. B. The graph would shift 2 units down. C. The graph would shift 3 units down. D. The graph would shift 3 units to the right. E. The graph would shift 3 units up.
7) Describe the transformation of $y = -x^2 + 7$ to the parent function? - Reflection - shift up 7 units	8) How would the graph of the function $y = x^2 + 2$ affected if the function were changed to $y = x^2 - 5$? Down 7 units

Exit Slip

1) How would the graph of the function $y = x^2 + 6$ be affected if the function were changed to $y = x^2 + 2$? a) The graph would shift 2 units up b) The graph would shift 4 units up c) The graph would shift 4 units down d) The graph would shift 4 units to the left e) The graph would shift 6 units up	2) Describe the transformation from the parent quadratic function to $y = -3x^2 + 6$. Shrink, reflection, shift 6 units up.

PUSH IT TO THE LIMIT.

Name: ______________________ TP: _____

CW#98: Graph $y = ax^2 + bx + c$
Geometry

CRS	Algebra Content
Objectives	4.3 Graph $y = ax^2 + bx + c$

Mixed Review!

1) Describe the transformation of $y = -2x^2 - 4$ to the parent function $y = x^2$? ① ② ③ ① REFLECTION ② VERTICAL STRETCH / HORIZONTAL SHRINK ③ VERTICAL SHIFT DOWN 4	2) How would the graph of the function $y = x^2 - 6$ be affected if the function were changed to $y = x^2 + 8$? VERTICAL SHIFT UP 14
3) What best describes the transformation of $y = -\frac{1}{3}x^2 - 9$ from the parent quadratic function? a) Reflection and shift down 9 units b) Reflection, VERTICAL shrink, and shift down 9 units c) Reflection, stretch, and shift down 9 units d) Reflection, stretch, and shift up 9 units	4) What best describes the transformation of $y = 8x^2$ from the parent quadratic function? a) Stretch b) Shrink c) Shift up 3 units d) Shift down 3 units

Directions: Graph the following quadratic equations in your notebook.

- VANG!

7) $y = -\frac{2}{5}x^2 + 2$ SKIP	8) $y = \frac{1}{3}x^2$ SKIP

NEW STUFF!! Graphing $y = ax^2 + bx + c$

Step 1: Sketch the graph to determine if it opens up ($a > 0$), and has a minimum value; or, opens down ($a < 0$), and has a maximum value.

Step 2: Find the axis of symmetry. The x-value of the axis of symmetry can be found by plugging the a and b term into: $-\frac{b}{2a}$. Lightly, draw a dashed line down the axis of symmetry.

Step 3: Find the vertex. The x-value of the vertex is the x-value of the axis of symmetry (from Step 2). To find the y-value of the vertex, substitute the x-value back into the original equation. Plot it!

Step 4: Plot the y-intercept of the parabola. The y-intercept is the value of c.

SHOW on CALCULATOR!

Step 5: Create a table using your graphing calculator. Graph it!

Step 6: Determine the domain and the range.

* STRESS to students to plot vertex 1st then pick x-values to left & right in order to complete table

Directions: Graph the following equations on your calculator. You must also show how you found the axis of

I'm Zesty and I know it.

Ex #1

THE DOMAIN IS ALL REAL #'S
THE RANGE IS GREATER THAN OR EQUAL TO −1.
THE VERTEX IS @ (3, −1)
THE ZERO'S ARE AT x = 4, 2.
THE Y-INTERCEPT IS AT 8

$y = x^2 - 6x + 8$

$y = (x-4)(x-2)$

$0 = (x-4) \quad 0 = (x-2)$

$x = 4, 2$ ZEROS

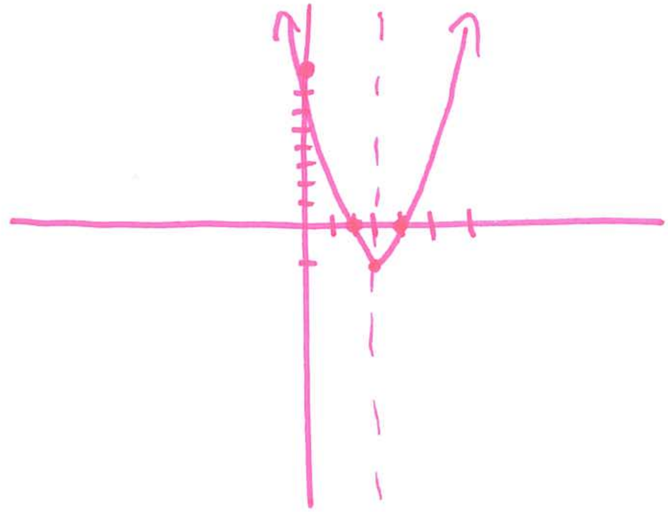
VERTEX: $x = \frac{-b}{2a} = \frac{6}{2} = 3$

$(3, -1)$

Y-INT $= 0^2 + 6(0) + 8$

$y = 8$

x	y	
0	8	← y-int.
1	3	
2	0	x-intercepts
3	−1	
4	0	x-intercepts
5	3	



Ex #2

$y = -x^2 - x + 6$

$y = -(x^2 + x - 6)$

$0 = -(x+3)(x-2)$

$0 = x+3 \quad 0 = x-2$

$x = -3, 2$

Y-INT = 6

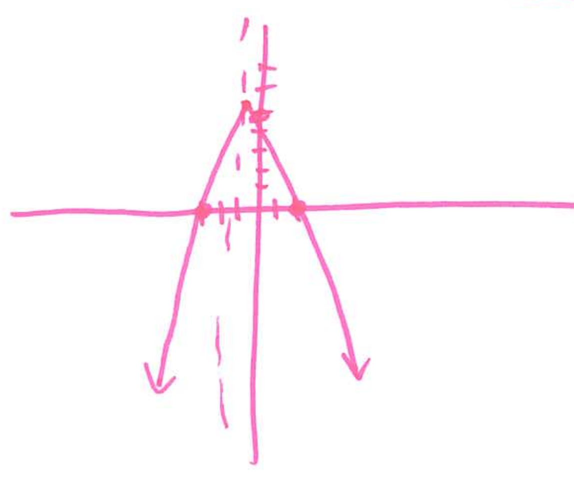
$y = -0^2 - 0 + 6$

VERTEX

$x = \frac{1}{2(-1)} = \frac{-1}{2}$

$(-\frac{1}{2}, 6.25)$

x	y	
−3	0	x-int
−2	4	
−1	6	
−0.5	6.25	−VERTEX
0	6	y-int
1	4	
2	0	x-INT



③

$y = x^2 - 4x - 5$

$y = (x-5)(x+1)$

$0 = x-5 \quad 0 = x+1$

$x = 5, -1$

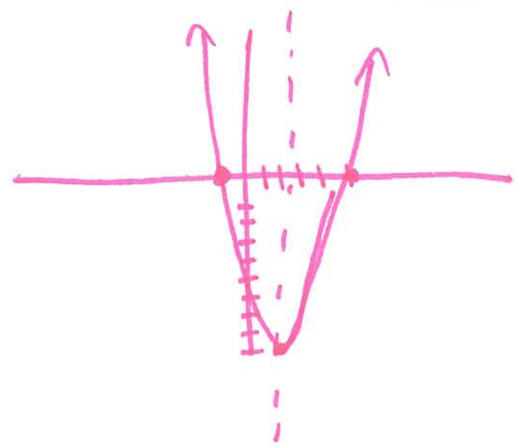
Y-INT

$y = -5$

VERTEX $x = \frac{-b}{2a} = \frac{4}{2} = 2$

$(2, -9)$

x	y	
-1	0	← x-int
0	-5	← y-int
1	-8	
2	-9	← VERTEX
3	-8	
4	-5	
5	0	← x-int



④

$y = x^2 - 9$

$y = (x-3)(x+3)$

$0 = x-3 \quad 0 = x+3$

$x = \pm 3$

y-INT @ -9

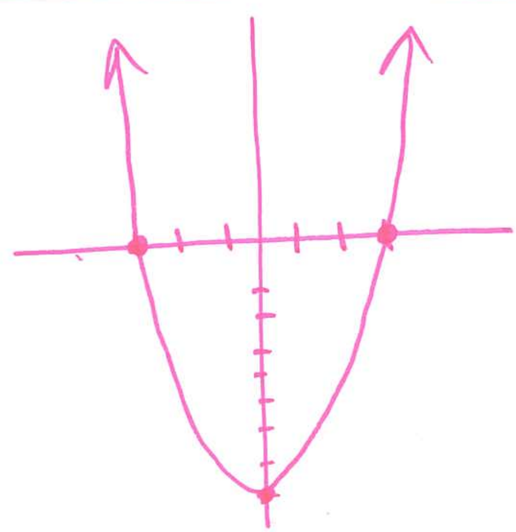
VERTEX

$x = -b/2a$

$x = 0$

$(0, -9)$

x	y	
-3	0	← x-INT
-2	-5	
-1	-8	
0	-9	← y-INT & VERTEX
1	-8	
2	-5	
3	0	← x-INT



5

$y = x^2 - 2x - 3$

$y = (x-3)(x+1)$

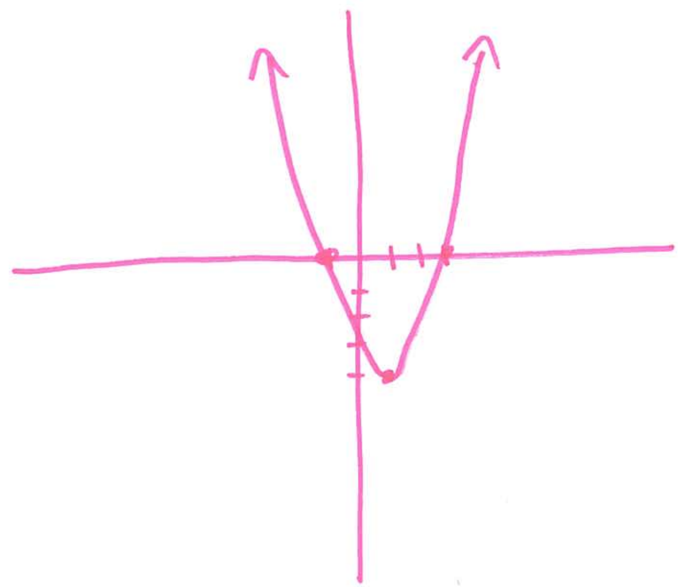
$x = 3, -1$

y-INT @ -3

VERTEX = $x = \frac{+2}{2} = 1$

$(1, -4)$

x	y	
-2	5	
-1	0	x-INT
0	-3	← y-INT
1	-4	VERTEX
2	-3	
3	0	x-INT



6

$y = x^2 - 6x + 5$

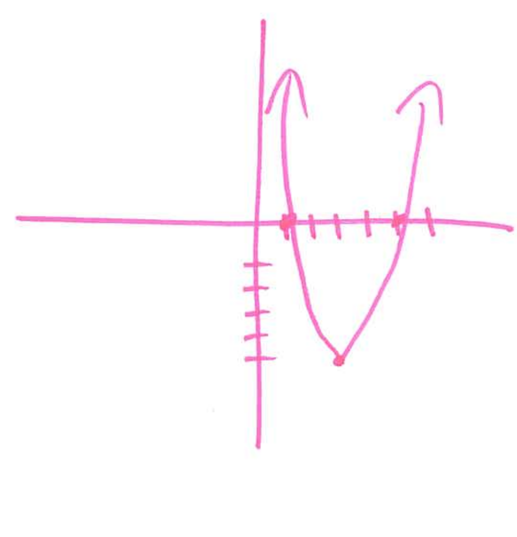
$x = 1, 5$

$y = 5$

VERTEX

$(3, -4)$

x	y
1	0
2	-3
3	-4
4	-3
5	0



7

$y = x^2 + 4x + 3$

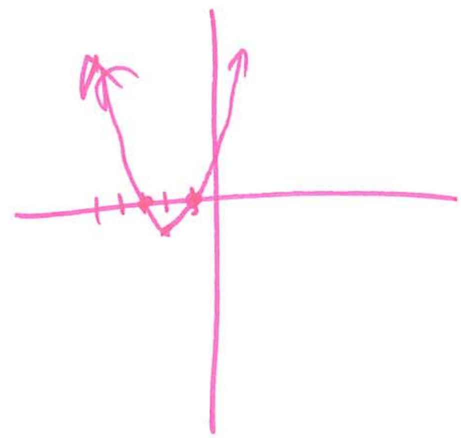
VERTEX = $(-2, -1)$

y-INT @ 3

x-INT @

$x = -1, -3$

x	y
-3	0
-2	-1
-1	0
0	3
1	2



8

$y = x^2 - 8x + 14$

VERTEX $(4, -2)$

y-INT @ 14

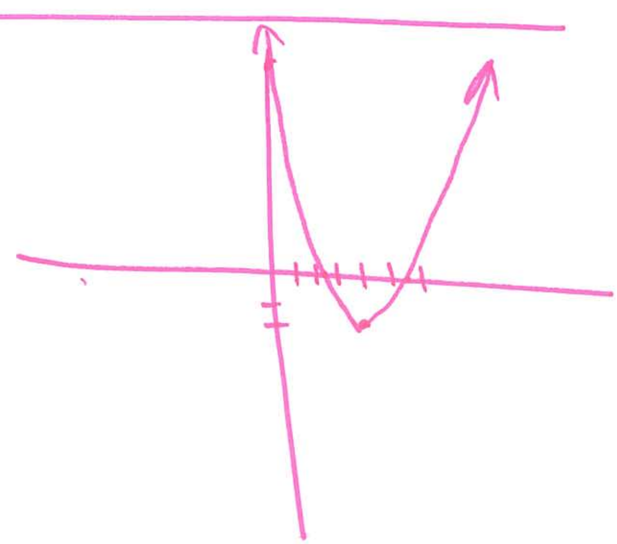
x-INT @

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{8 \pm \sqrt{64 - 4(1)(14)}}{2}$$

$$\frac{8 \pm \sqrt{8}}{2}$$

$x = 5.41, 2.58$

x	y
0	14
2	2
3	-1
4	-2
5	-1
6	2
7	7
2.58	0
5.41	0



9

$y = x^2 - x - 20$

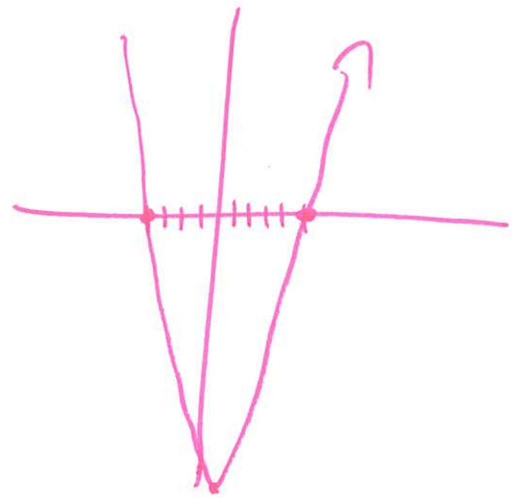
$(x-5)(x+4)$

X-INT @ 5, -4

Y-INT @ -20

VERTEX @ $\left(\frac{1}{2}, -20.25\right)$

x	y
0	-2
1	-20
2	-18
3	-14
4	-8
5	0
6	10



10

$y = x^2 + 9x + 18$

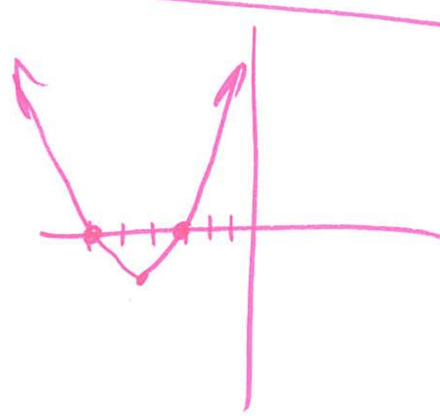
$(x+6)(x+3)$

$x = -3, -6$

Y-INT @ 18

VERTEX $(-4.5, -2.25)$

x	y
-6	0
-5	-2
-4	-2
-3	0
-2	4
-1	10



Name: ______________________________ TP: _____

CW#99: Quadratic Formula
Geometry

CRS	XEI 605 Solve quadratic equations
Objective	4.7 Solve quadratic equations by using the quadratic formula

Mixed Review!

Use square roots to solve quadratics when they only have the __ term and the __ term.

1) Solve using square roots: $-4 - 10k^2 = -714$	2) Solve using square roots: $2(3+4x)^2 = 32$
3) Find the sum of the solutions using factoring: $7m^2 + 4 = -29m$	4) Find the sum of the solutions using factoring: $8p^2 + 7p = 1$

Factor the quadratic equation below:

$2x^2 + x - 21 = 0$

Uh oh is right! What happens when I *cannot* solve a quadratic equation by factoring or using square roots? The answer? **USE THE QUADRATIC FORMULA !**

SSSIIINNNGGGG: To the tune of, "Pop goes the Weasel!"... *"x equals negative b, plus or minus the square root, of b squared minus 4-a-c, all over 2a!"*

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Bringing Zesty Back

Step 1: Rearrange the equation so that it is set equal to _________ .

Step 2: List out ____ , ____ and ____ .

Step 3: Substitute ____ , ____ and ____ into $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Example 1: Find the solutions of $2m^2 - 5m - 42 = 0$ a = ___ b = ___ c = ___	**Example 2:** What are the roots of $4z^2 = 7z + 2$? a = ___ b = ___ c = ___

Use the quadratic formula to find the roots of the equation. Round your solution to the nearest hundredth, if necessary.

1) $6v^2 - 5v - 69 = 0$ a = ___ b = ___ c = ___	2) $x^2 + 12x + 20 = 0$ a = ___ b = ___ c = ___
3) $4a^2 - 100 = 0$	4) $4x^2 - 4x = 15$

5) $4n^2 = 3 - 4n$

6) $6x^2 - 6 = -9x$

7) $x^2 - x - 6 = 4x$

8) $6n^2 + 11n - 81 = 7 + 9n$

9) Solve:

$7x^2 - 5 = -4x$

10) Solve:

$4x^2 + 8 = -7x$

---EXIT SLIP---

1) Solve: $2n^2 - 9 = -9n$

Name: ______________________ TP: ______

HW#96: Graph $y = ax^2 + c$
Geometry
Due Date: Tuesday, May 13th

Failure to show work on all problems or use complete sentences will result in a LaSalle.

1) $y = x^2 - 2$

Verbal:

y-intercept:

-2

x-intercept:

± 1.41

Domain:

All $\mathbb{R}$

Range:

$y \geq -2$

Vertex (min/~~max?~~):

$(0, -2)$

Axis of Symmetry:

$x = 0$

These must all be shown in the "G" section as well.

Analytical:

Y-INT
$y = 0^2 - 2$
$y = -2$

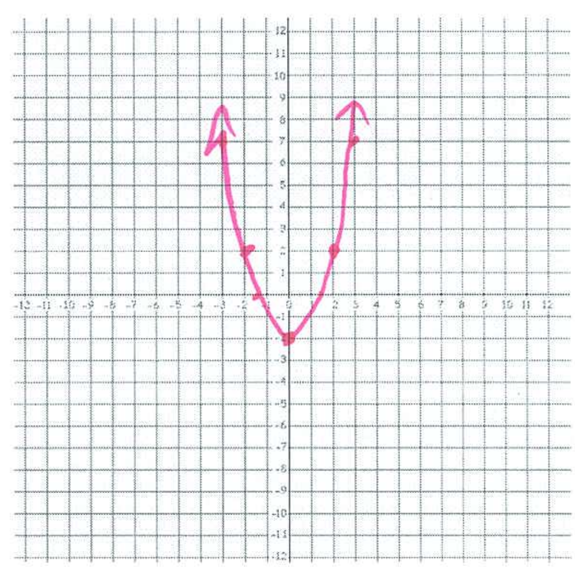
X-INT
$0 = x^2 - 2$
$\sqrt{2} = \sqrt{x^2}$
$x = \pm 1.41$

VERTEX
$(0, -2)$

Numerical:

x	y	
-3	7	
-2	2	
-1.44	0	x-INT
-1	-1	
0	-2	y-INT, VERTEX
1	-1	
1.44	0	x-INT
2	2	
3	7	

Graphical:



I'm Zesty and I know it.

2) $y = -\frac{1}{4}x^2 + 1$

Verbal:

y-intercept:

1

x-intercept:

± 2

Domain: $\mathbb{R}$

Range: $y \leq 1$

Vertex (min/max?):

Axis of Symmetry:

$x = 0$

Analytical:

y-INT @ 1

x-INT

$0 = -\frac{1}{4}x^2 + 1$

$-1 = -\frac{1}{4}x^2$

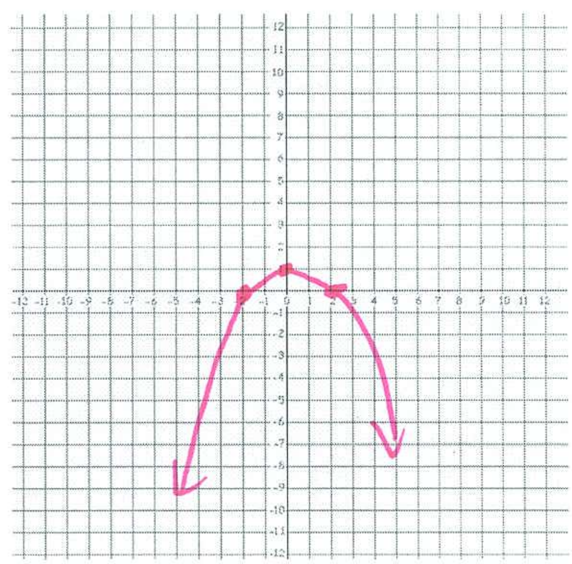
$\sqrt{4} = \sqrt{x^2}$

$\pm 2 = x$

Numerical:

x	y
-3	-1.25
-2	0
-1	.75
0	1
1	.75
2	0
3	-1.25

Graphical:



I'm Zesty and I know it.

1) $[-8^3(-2^6)]^2$ $[-8^3(-2^6)]^2$ $-8^6 \cdot -2^{12}$	2) $(-3g^3h^2)^4$ $81g^{12}h^8$	3) $(-j^2k^4)^9$ $-j^{18}k^{36}$	4) $(2l^4m)^2$ $4l^8m^2$
5) $[(-3)^9]^8$ -3^{72}	6) $[-5^{10}(-2^6)]^3$ $-5^{30}-2^{18}$	7) $(-12hj)^2$ $144h^2j^2$	8) $(10w^2x^3y)^3$ $1000w^6x^9y^3$

I’m Zesty and I know it.

HW#97: Compare to Parent Quad. Function
Geometry
Due Date: Wednesday, May 14th

Name: ______________________ TP: ______

Failure to show work on all problems or use complete sentences will result in a LaSalle.

1. Which multiple choice option describes the correct transformation to the parent graph ($y = x^2$)?
$y=-2x^2$

A. Shrink and shift down 2 units
B. Stretch and shift down 2 units
C. Stretch and reflection across the x-axis
D. Shrink, shift down 2 units, and reflection across the x-axis
E. Shrink and reflection across the x-axis

C

2. How would the graph of the function $y = x^2 + 2$ be affected if the function were changed to $y = x^2 - 5$?

A. The graph would shift 5 units up.
B. The graph would shift 5 units down.
C. The graph would shift 7 units down.
D. The graph would shift 7 units to the right.
E. The graph would shift 2 units down.

C

3. Describe the transformation of $y = -\frac{3}{4}x^2 + 1$ to the parent function.

① ② ③

① REFLECTION
② VERTICAL SHRINK
③ VERTICAL SHIFT ↑ 1

4. How would the graph of the function $y = x^2 - 1$ affected if the function were changed to $y = 2x^2 - 4$?

VERTICAL STRETCH
MOVE DOWN 3

5) Describe the transformation of $y = 3x^2 - 4$ to the parent function.

SHRINK,
UP 4

6) How would the graph of the function $y = x^2 - 4$ be affected if the function were changed to $y = -x^2 + 3$?

REFLECTON
UP 7

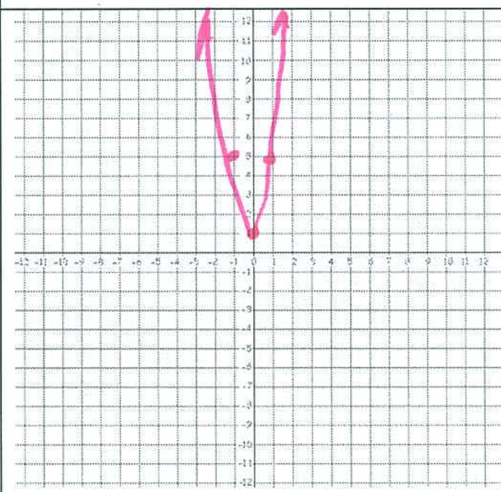
7) $y = 4x^2 + 1$

A) Create a table of values.

x	y
-2	17
-1	5
0	1
1	5
2	17

$-1 = 4x^2$
$-\frac{1}{4} = x^2$
NONE

B) Graph the equation
C) Identify the axis of symmetry: $x = 0$
D) Identify the vertex: (0, 1) Max? or Min?
E) Identify the domain: ℝ
& range: $y \geq 1$



I'm Zesty and I know it.

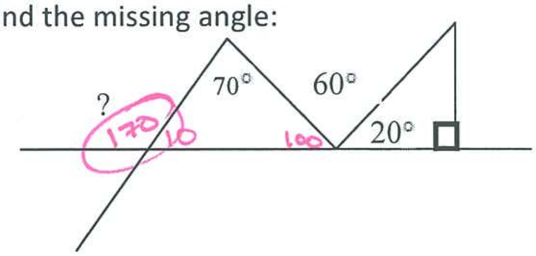
8) Write an equation of the line that passes through point P and is parallel to the line with the given equation. ***P(2, 0) and*** y= - x+1.

$m = -1$

$y - 0 = -1(x-2)$

$y = -x + 2$

9) Find the missing angle:



10) If a rectangle has a length of one sixth the width, and the width is 36 mm

a. Find the length

$36 \cdot \frac{1}{6} = 6$

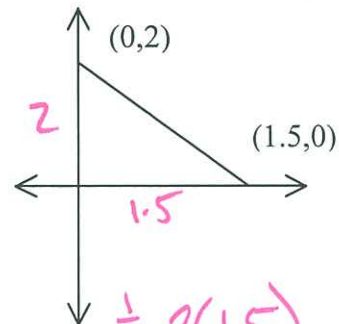
b. Find the area

$6 \cdot 36 = 216$

c. Find the perimeter

$12 + 72 = 84$

11) Find the area of the following triangle



$\frac{1}{2} 2(1.5)$

$\boxed{1.5}$

12) A circle has a circumference of 84.823 yards.

a. Find the radius of the circle, to the nearest ones' place

$C = 2\pi r$

$\frac{84.823}{2\pi} = \frac{2\pi r}{2\pi}$

$13.5 = r$

b. Find the area of the circle using the radius that you found.

$A = \pi(13.5)^2$

38.48

13) Given a circle with diameter 12 inches long, find the circumference.

$C = d\pi$

$C = 12\pi$

$C = 37.7$ in

I'm Zesty and I know it.

Name: ______________________________ TP: ______

HW#98: Graph $y = ax^2 + bx + c$
Due Date: Thursday, May 15th

Failure to show work on all problems or use complete sentences will result in a LaSalle.

1) Describe the transformation of $y = -\frac{4}{5}x^2 - 2$ to the parent function.

REFLECTION
STRETCH
UP 2

2) How would the graph of the function $y = x^2 + 4$ be affected if the function were changed to $y = x^2 + 7$?

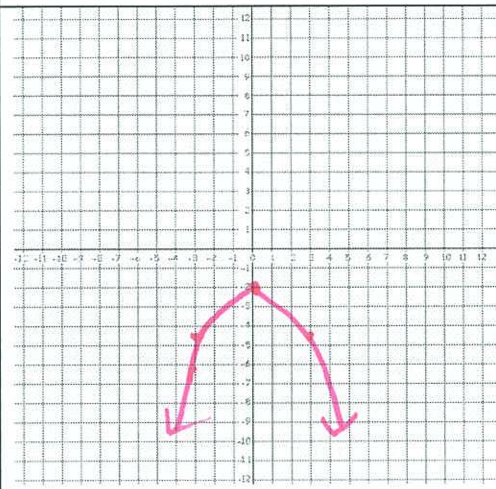
UP 3 UNITS

3) $y = -\frac{1}{4}x^2 - 2$

A) Create a table of values.

-3	-4.25
-2	-3
-1	-2.25
0	-2
1	-3
2	-4.25

B) Graph the equation



C) Identify the axis of symmetry: 0

D) Identify the vertex: 0,-2 Max? or Min?

E) Identify the domain: ALL ℝ

& range: $y \leq -2$

4) $y = -2x^2 + 8x - 11$

V

A

X-INT ~~[illegible]~~ NONE

Y-INT -11

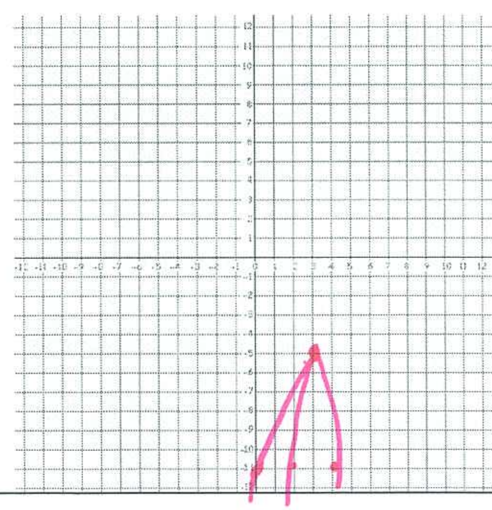
VERTEX $\frac{-8}{-4} = 2$

(2,-3)

N

x	y
-1	-21
0	-11
1	-5
2	-3
3	-5
4	-11
5	-21

G



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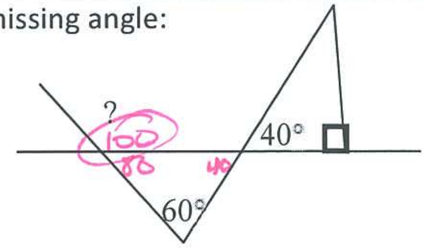
4) Write an equation of the line that passes through point P and is parallel to the line with the given equation. P(-22, -11) and y=x+12.

$y+11 = 1(x+22)$

$y+11 = x+22$

$y = x+11$

5) Find the missing angle:



6) If a rectangle has a length of 42.5 cm and a width of 16 cm , find:

a. The area

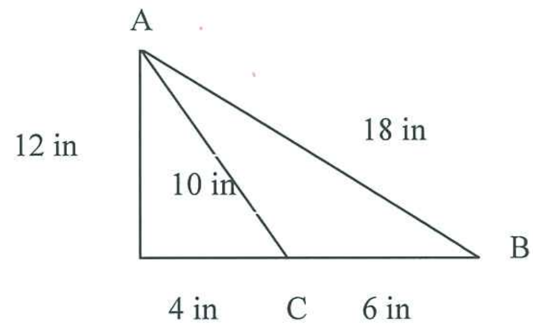
$42.5 \cdot 16 =$

680

b. The perimeter

$32 + 85 = 117$

7) Find the area and perimeter for triangle ABC:



$6 \cdot 12 \cdot \frac{1}{2}$

$\boxed{36}$

8)

$(-2cd^4)^3 \cdot (4dc^3)^3$

$-2^3c^3d^{12} \cdot 4^3d^3c^9$

$-512\,c^{12}d^{15}$

9) $\omega x^4y^2(2xy)^3$

?

10)

$\dfrac{y^2(yx^2)^4}{2x^4}$

$\dfrac{y^2(y^4x^8)}{2x^4}$

$\dfrac{y^6x^8}{2\cancel{x^4}}$

$\dfrac{y^6x^4}{2}$

11)

$(x^2y^4)^4 \cdot 2x^4y^3$

$x^8y^{16} \cdot 2x^4y^3$

$2x^{12}y^{19}$

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Name: ______________________________ TP: _____

HW#99: Graph $y = ax^2 + bx + c$
Due Date: Friday, May 16th

1) $y = x^2 - 7x + 12$

Verbal:

y-intercept:
12

x-intercept:
4, 3

Domain:
$\mathbb{R}$

Range:
$y \geq -.25$

Vertex (min/max?):
$(3.5, -.25)$

Axis of Symmetry:
$x = 3.5$

These must all be shown in the "G" section as well.

Analytical:

$y = x^2 - 7x + 12$

$(x-4)(x-3)$

$x = 4, 3$

y-INT @ 12

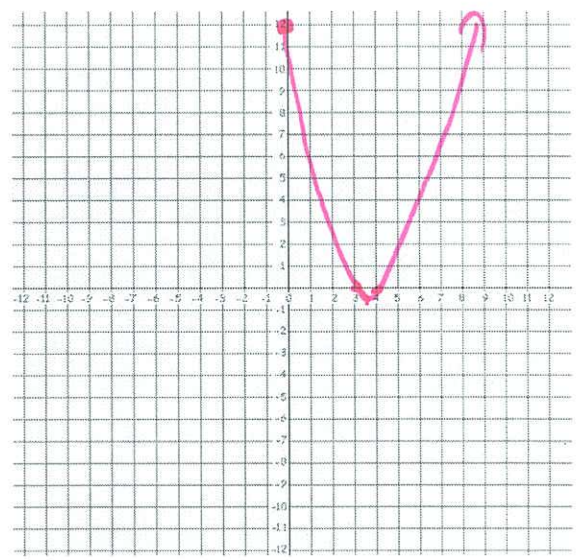
VERTEX

$\frac{7}{2} = (3.5, -.25)$

Numerical:

x	y
0	12
1	6
2	2
3	0
3.5	-.25
4	0
5	2
6	6

Graphical:



I'm Zesty and I know it.

2) $y = x^2 - 2x - 15$

Verbal:

y-intercept:

-15

x-intercept:

5, -3

Domain:

$\mathbb{R}$

Range: $y \geq -16$

Vertex (min/max?):

1, -16

Axis of Symmetry:

$x = 1$

Analytical:

$y = x^2 - 2x - 15$

$(x-5)(x+3)$

$x = 5, -3$

y-INT @ -15

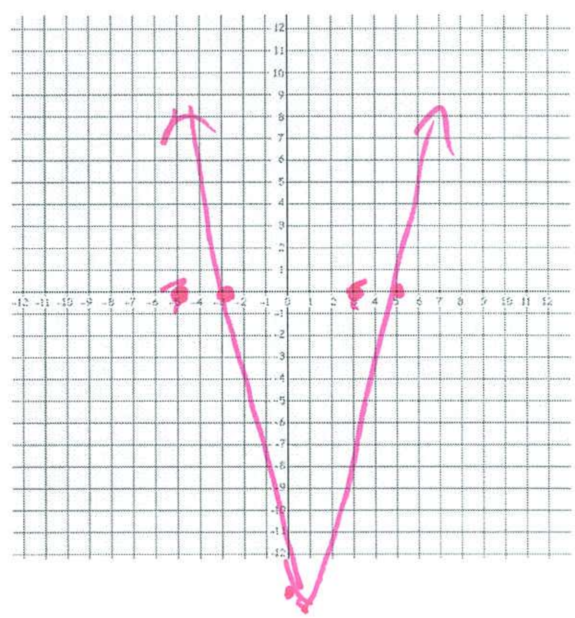
VERTEX $\frac{2}{2} = 1$

$(1, -16)$

Numerical:

-3	0
-2	-7
-1	-12
0	-15
1	-16
2	-15
3	-12
4	-7
5	0

Graphical:



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Name: ______________________________ TP: _____

HW100: Solve Using Quadratic Equation
Due Date: Friday, May 16th

Solve for the solution using the quadratic equation.

1) $4b^2 = 9b + 18$

2) $x^2 - 2x = 7$

3) $3p^2 = -9 + 6p$

NEXT PAGE

4) $9a^2 = -9a + 1$

5) $3p^2 = 12$

6) $5x^2 + 8 = -4x$

7) $k^2 = 1$

8) $10x^2 = 8x + 9$

On a separate sheet of paper VANG #2 and 6

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ID: 1

Algebra 2 Name_______________

Assignment

Date_______________ Period____

Solve each equation with the quadratic formula.

1) $4b^2 = 9b + 18$

$\left\{\frac{9 + 3\sqrt{41}}{8}, \frac{9 - 3\sqrt{41}}{8}\right\}$

2) $x^2 - 2x = 7$

$\{1 + 2\sqrt{2}, 1 - 2\sqrt{2}\}$

3) $3p^2 = -9 + 6p$

$\{1 + i\sqrt{2}, 1 - i\sqrt{2}\}$

4) $9a^2 = -9a + 1$

$\left\{\frac{-3 + \sqrt{13}}{6}, \frac{-3 - \sqrt{13}}{6}\right\}$

5) $3p^2 = 12$

$\{2, -2\}$

6) $5x^2 + 8 = -4x$

$\left\{\frac{-2 + 6i}{5}, \frac{-2 - 6i}{5}\right\}$

7) $k^2 = 1$

$\{1, -1\}$

8) $10x^2 = 8x + 9$

$\left\{\frac{4 + \sqrt{106}}{10}, \frac{4 - \sqrt{106}}{10}\right\}$

9) $2k^2 + 8 = 3k$

$\left\{\frac{3 + i\sqrt{55}}{4}, \frac{3 - i\sqrt{55}}{4}\right\}$

10) $10x^2 = -3 + 2x$

$\left\{\frac{1 + i\sqrt{29}}{10}, \frac{1 - i\sqrt{29}}{10}\right\}$

11) $-n^2 + n - 10 = 5n - 8n^2$

$\left\{\frac{2 + \sqrt{74}}{7}, \frac{2 - \sqrt{74}}{7}\right\}$

12) $4n^2 + 9n + 15 = 6 + 6n$

$\left\{\frac{-3 + 3i\sqrt{15}}{8}, \frac{-3 - 3i\sqrt{15}}{8}\right\}$

13) $6v^2 - 17 - 6v = -6v + 1$

$\{\sqrt{3}, -\sqrt{3}\}$

14) $14 + 4x = 6x^2 + 4x$

$\left\{-\frac{\sqrt{21}}{3}, \frac{\sqrt{21}}{3}\right\}$

15) $5n = -n^2 - 8 + 8n$

$\left\{\frac{3 + i\sqrt{23}}{2}, \frac{3 - i\sqrt{23}}{2}\right\}$

16) $-18 + 10p = -10p^2 + 10p$

$\left\{\frac{3\sqrt{5}}{5}, -\frac{3\sqrt{5}}{5}\right\}$

17) $4 - 15x = 4x^2 + 9 - 8x$

$\left\{\frac{-7 - i\sqrt{31}}{8}, \frac{-7 + i\sqrt{31}}{8}\right\}$

18) $9k^2 + 10 = 3k^2$

$\left\{\frac{i\sqrt{15}}{3}, -\frac{i\sqrt{15}}{3}\right\}$